Data Limitations and Validation Report Lockheed Idaho Technologies SDG 93052416 Argonne National Laboratory - West

Semivolatile Organic Compounds Three Aqueous Samples

Validated by:

Data Validator

Approved by:

Joseph A. Samchuck **Data Validation Quality** 

Assurance Officer

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#### 1.0 INTRODUCTION

The Argonne National Laboratory - West sample set for Case No. 93052416, SDG 93052416 consists of three aqueous samples analyzed for Target Compound List (TCL) semivolatile organic compounds. All analyses were conducted using SW-846 Method 8270 analytical and reporting protocols. The analyses were performed by the Biospherics Laboratory using the protocols outlined in the ANL-West SOW. The data were reported as a Level IV analysis. A Level A review was performed on the samples contained in this SDG. A total of 192 sample data points were reported in this analytical data set.

The analytical data from these analyses were reviewed by HALLIBURTON NUS Corporation personnel in accordance with ERP Standard Operating Procedure SMO-SOP-12.1.3.

## 2.0 QUALITY CONTROL SUMMARY

The data were evaluated based on the following parameters:

Data Completeness
Holding Times
GC/MS Tuning and Mass Calibration
Continuing Calibrations

- \* Blank Analyses
  Surrogate Spike Recoveries
  Matrix Spike/Matrix Spike Duplicate Results
  Internal Standards Performance
  System Performance and Detection Limits
- Compound Identification
- Compound Quantitation

The asterisk indicates that all quality control criteria were met for this parameter. Problem areas affecting data usability are discussed in Section 4.0 of this report. A Glossary of Data Validation Flags which defines the validation qualifiers applied on a sample-specific basis is presented in Section 6.0.

## 3.0 DATA COMPLETENESS

The data presented in Case No. 93052416, SDG 93052416 consists of semivolatile organic results for three (3) aqueous samples as follows:

MW-11(93052416-3) EBR-II No. 1(93052416-1) EBR-II No. 2(93052416-2)

The data package was incomplete as submitted. Chain of custody forms were not provided. Initial calibration Form VIs and their corresponding DFTPP Form Vs were not contained in the data package. A semivolatile DFTPP instrument performance check Form V was not provided for the calibration performed on 06/10/93. Presentation and documentation of the data package deliverables were extremely poor. The data package does not conform to a Level A deliverable. Notable omissions of forms include: missing extraction dates on Form Is for environmental samples, missing units on Form Is, sample wt/vol, etc., and an illegible continuing calibration from 06/03/93. No contact with the laboratory was required to complete the validation of this package.

#### 4.0 SUMMARY OF DATA USABILITY

It should be noted that a chain of custody form for the samples contained in this SDG was not provided. Furthermore, the date of extraction was not provided on the laboratory Form I's for all three samples. Therefore, holding time noncompliances could not be evaluated for the samples in this SDG.

The continuing calibration from 06/03/93 does not contain Relative Response Factors and Percent Differences for all TCL semivolatile compounds. Therefore, the sample EBR-II No. 1(93052416-1), that was analyzed under this continuing calibration was not evaluated for calibration noncompliances.

Continuing calibration Percent Differences (%Ds) greater than 50% quality control limit were reported for indeno(1,2,3-cd)pyrene, dibenz(a,h)anthracene and benzo(g,h,i)perylene. Positive and nondetected results are affected by this noncompliance. As a result, nondetected results for the aforementioned compounds were qualified as estimated, (UJ), in the affected samples.

Several compounds had continuing calibration %Ds greater than 25% reported. No action was taken since no positive results were reported for these compounds in the affected samples, and nondetected results are not compromised by these noncompliances.

It should be noted that the laboratory incorrectly reported the surrogate recoveries on the Form II for all the samples listed. This includes MW-11(93052416-3), EBR-II No. 1(93052416-1), EBR-II No. 2(93052416-2) and a laboratory blank. The correct recoveries were obtained from the raw data and the Form II was amended.

Sample MW-11(93052416-3) had a zero percent recovery reported for the surrogate 2-Fluorophenol. As a result, of this severe noncompliance, nondetected results for the acid-fraction compounds in sample MW-11(93052416-3) were considered unreliable and were rejected, (R).

The Matrix Spike/Matrix Spike Duplicate (MS/MSD) analyses of sample EBR-II No. 2 yielded high Percent Recoveries (%Rs) for pyrene. Positive results only are affected by this noncompliance. No action was taken since only nondetected results were reported for this compound in the unspiked sample.

It should be noted that the laboratory inadvertently failed to report internal standard areas on the Form VIII for the three environmental samples in this SDG. Internal Standard Check Reports were found in the raw data, and are submitted in the support documentation. However, the 12 hour standard and upper/lower limits were reported incorrectly. Based on the raw data, the data reviewer has amended the appropriate forms.

Sample MW-11(93052416-3) had a poor recovery reported for the internal standard perylene-d12. As a result, nondetected results quantitated by perylene-d12 were qualified as estimated, (UJ).

Annotated laboratory Form I data summary reports showing the data and relevant qualifier flags applied are presented in Appendix A of this report. Copies of the unqualified data summary reports as reported by the laboratory are provided in the attached Appendix B. The attached Appendix C includes documentation to support the findings discussed in this report.

TABLE 1

LOCKHEED IDAHO TECHNOLOGIES

Case No. 93052416, SDG 93052416

SEMIVOLATILE ORGANIC COMPOUNDS

Sample No.	Qualifier Flags
MW-11(93052416-3)	J <sup>1,2</sup> R <sup>1</sup>
EBR-II No. 1(93052416-1) EBR-II No.2(93052416-2)	J¹

<sup>\*</sup> See Section 6.0 Glossary of Data Validation Flags for qualifier flag definitions.

A sample-specific summary of the data validation flags applied is depicted in Table 1, appearing on the previous page. The qualifier flags used as a result of the validation process are defined in Section 6.0 (Glossary of Data Validation Flags) of this report. Details regarding the application of the validation qualifiers are discussed in the remainder of this section.

## 4.1 Holding Times

It should be noted that a chain of custody form for the samples contained in this SDG was not provided. Furthermore, the date of extraction was not provided on the laboratory Form I's for all three samples. Therefore, holding time noncompliances could not be evaluated for the samples in this SDG.

#### 4.2 Calibrations

Initial calibrations from 05/24/93 and 05/27/93 were not provided in the data package. The continuing calibration from 06/03/93 does not contain Relative Response Factors and Percent Differences for all TCL semivolatile compounds. Therefore, the sample EBR-II No 1(93052416-1,) that was analyzed under this continuing calibration was not evaluated for calibration noncompliances. The inconsistent presentation and lack of data compromises the calibration assessment.

The continuing calibration performed on instrument GC/MS #4 (06/10/93) at 00:49 contained the following %Ds which failed to meet the 50% quality control criterion:

Compound	_%D_
Indeno(1,2,3-cd)pyrene Dibenz(a,h)anthracene Benzo(g,h,i)perylene	66.2 67.2 70.4

Affected Samples: EBR-II No.2(93052416-2), MW-11(93052416-3)

Nondetected results for the aforementioned compounds were qualified as estimated, (UJ), in the affected samples.

The continuing calibration performed on instrument GC/MS #4 (06/10/93) at 00:49 contained the following %Ds which failed to meet the 25% quality control criterion:

Compound	_%D_
Bis(2-chloroethyl)ether 4-Nitrophenol Benzidine Bis(2-ethylhexyl)phthalate	25.7 31.5 35.0 48.6
Benzo(b)fluoranthene Benzo(k)fluoranthene	42.1 34.5

Affected Samples: EBR-II No.2(93052416-2), MW-11(93052416-3)

No actions were necessary for the aforementioned compounds since no positive results were reported, in the affected samples.

#### 4.3 Surrogate Recoveries

It should be noted that the laboratory incorrectly reported the surrogate recoveries on the Form II for the samples contained in this SDG. The correct recoveries were obtained from the raw data and the Form II was amended.

Sample MW-11 had a zero percent recovery reported for the surrogate 2-Fluorophenol. As a result, of this severe noncompliance, nondetected results for the acid-fraction compounds in sample MW-11 were considered unreliable and were rejected, (R).

## 4.4 Matrix Spike/Matrix Spike Duplicate Results

The MS/MSD analyses of sample EBR-II No. 2 yielded high %Rs for pyrene. Positive results only are affected by this noncompliance. No action was taken since only nondetected results were reported for this compound in the unspiked sample.

#### 4.5 Internal Standard Areas

It should be noted that the laboratory inadvertently failed to report internal standard areas on the Form VIII's three samples in this SDG. Internal Standard Check Reports were found in the raw data, and are submitted in the support documentation. However, the 12 hour standard and upper/lower limits were reported incorrectly. Based on the raw data, the data reviewer has amended the appropriate forms.

Sample MW-11 had a poor recovery reported for the internal standard perylene-d12. As a result, nondetected results quantitated by perylene-d12 were qualified as estimated, (UJ).

#### 4.7 Additional Comments

It should be noted that the detection limits on the laboratory Form is may be incorrect. The detection limits may be low by a factor of two since only 500 ml were extracted instead of the method indicated amount of 1000 ml.

#### 5.0 SUMMARY OF LABORATORY PERFORMANCE

Chain of custody forms and laboratory Form Vs and VIs were not contained in the data package. A semivolatile DFTPP instrument performance check Form V was not provided for the calibration performed on 06/10/93. Also, the laboratory Form I;s for the environmental samples were not completed. A continuing calibration Form VII was unreadable and did not contain all the necessary information. Continuing calibration %Ds greater than 50% quality control limit were reported for indeno(1,2,3-cd)pyrene, dibenz(a,h)anthracene and benzo(g,h,i)perylene. Several compounds had continuing calibration %Ds greater than 25% reported. Sample MW-11 had a zero percent recovery reported for the surrogate 2-Fluorophenol. Sample MW-11 had a poor recovery reported for the internal standard perylene-d12.

The overall documentation and completeness of the data package deliverables were extremely poor. The inadequate presentation of the information in this package has compromised the validation review.

## 6.0 GLOSSARY OF DATA VALIDATION FLAGS

The following data validation flags were applied to the sample data for reasons detailed previously in this report:

- J<sup>1</sup> Accept data, but qualify nondetected results for indeno(1,2,3-cd)pyrene, dibenz(a,h)anthracene and benzo(g,h,i)perylene as estimated, (UJ), as a result of a continuing calibration %D greater than 50%.
- J<sup>2</sup> Accept data, but qualify nondetected results quantitated by the internal standard perylened12 as estimated, (UJ), as a result of a poor internal standard area.
- R<sup>1</sup> Reject, (R), nondetected results for the acid-fraction compounds as a result of an extremely poor surrogate %R for 2-fluorophenol.

## 7.0 REFERENCES

The data referenced in this report were validated in accordance with the protocols outlined in ERP Standard Operating Procedure SMO-SOP-12.1.3 as presented in ERP-SOW-37. In addition, details stipulating laboratory procedures as outlined in the ANL-West SOW were referenced.

# APPENDIX A QUALIFIED LABORATORY RESULTS

## 1B SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NUMBER

Lab Name:	BIOSPHERICS INCORPORATED Contract: ARGONNE	EBR II NO1
Lab Code:	93052416 Case No.: 93052416 SAS No.:	SDG No.:
Matrix: (so	oil/water) WATER Lab Sample ID:	93052416-1
Sample wt/v	/ol: (g/mL) Lab File ID:	
Level: (low		05/24/93
8 Moisture:	decanted: (Y/N Date Extracted)	
Concentrated	ed Extract Volume: ()L) Date Analyzed:	06/03/93
Injection Vo	Olume: Dilution Factor:	1
GPC Cleanup:		
ore creamup.	p(H:	NUC a
	CONCENTRATION UNITS:	$\mathcal{T}_{\!\!\!0} \mathcal{N}^{\!\!\!\!0}$
CAS NO.	COMPOUND (ug/L or ug/Kg)	Q
108-95-2	Phenol	
111-44-4		10 <sub>1</sub> U
95-57-8		10 0
541-73-1		10,0
106-46-7		10 0
95-50-1	•, • • • • • • • • • • • • • • • • • •	10,0
95-48-7	-,	10 0
108-60-1		1010
106-44-5	a, - onjure (r onitoropropante)	NR
621-64-7		1010
67-72-1	" "Totolo az " broblitamine	10,0
98-95-3		10:0
78-59-1		10,0
	2-Nitrophenol	10 0
105-67-9		10 0
111-91-1	-,	50 บ
120-83-2	(	10 ប៊
120-82-1	_,	50 U
	1,2,4-Trichlorobenzene Naphthalene	10¡U
106-47-8		10 0
	Hexachlorobutadiene	50iU
	4-Chloro-3-methylphenol	10 U
91-57-6	2-Methylnaphthalene	50เบ
77-47-4	Hexachlorocyclopentadiene	10 U
98-06-2	nexacniorocyclopentadiene	10:0
05-05-4	2,4,6-Trichlorophenol	10,0
	2,4,5-Trichlorophenol	1010
91-30-1 88-74-4	2-Chloronaphthalene 2-Nitroaniline	10 ປ
131-11-3		5010
		10 U
£06-20-2-	Acenaphthylene	10 0
000-20-2	2,6-Dinitrotoluene 3-Nitroaniline	10 U
99-09-2- * <b>-</b> 93-39-0.	3-Nitroaniline Acenaphthene	50 U
03-34-7 <b>-</b>	Acenaphthene	10,0

Lab Name: BIOSPHI	ERICS INCOR	PORATED	Contract	: ARGONNE	EBR II NOI	
Lab Code: 9305241	Case No.	93052416	SAS No.		SDG	No. 1
Matrix: (soil/wate:	) WATER	_		Lab Sample ID:	93052416-1	
Sample wt/vol:		(g/mL)		Lab File ID:		
Level: (low/med)	LOW	_		Date Received:	05/24/93	
% Moisture:	decar	nted: (Y/N)		Date Extracted:		
Concentrated Extrac	t Volume:	<del></del>	_ (uL)	Date Analyzed:	06/03/93	
Injection Volume:		(uL)		Dilution Factor:	1	en
GPC Cleanup: (Y/N)		pH:	<del></del>			All
CAS NO.	COMPOUND		CONCENTRATI		ug/L	Ω
51-28-5	- 2,4-Dinit	rophenol			<u> </u>	
[100-02-7	4-Nitroph	enol	ř	<del></del>		50 ซ
132-64-9	Dibenzofu		į			50 U
121-14-2			į			10 <sub>1</sub> U
184-66-2		thelete	į			10 U
7005-72-3	Diethylphi 4-chloren	ruarace	[			10 <sub>1</sub> U
86-73-7	- 4-curoropi	renyt-buen	Alequer			10 U
100-01-6	4-Nitroani		<u>I</u>			INR
534-52-1						50¦U
86-30-6	4,6-Dinita	co-2-methy	'iphenol			501U
86-30-6-	N-WILLOSOC	nbuenArem	dne (1)		***************************************	10,0
118-74-1	4-Bromophe	py1-pheny	lether			1010
187-86-5-	Hexachlord	benzene				10,0
187-86-5	Pentachlor	ophenol	Ī			5010
85-01-8			- F			10 U
	Anthracene	•				100
86-74-8					<del></del>	NR
184-74-2	Di-n-butyl	phthalate	Ļ		<del></del>	100
1206-44-0	Fluoranthe	ne	-			100
129-00-0	Pyrene		Ļ			100
185-68-7	Butylbenzy	lphthalat	e	<del></del>	<del></del>	10,0
91-94-1	3,3'-Dich1	orobenzid	ine [			20.0
156-55-3	Benzo(a) an	thracene	ī	<del> </del>		
218-01-9	Chrysene				· · · · · · · · · · · · · · · · · · ·	1010
1117-81-7	bis(2-Ethy	lhexyl)ph	thalate i			10,0
117-84-0	Di-n-octyl	phthalate	ŗ			1010
205-99-2	Benzo(b)fl				<del></del>	10,0
207-08-9	Benzo(k)fl				·	1010
150-32-8	Benzo(a)py		<u>Ļ.</u>			10 U
193-39-5	Indeno(1,2	,3-cd)pvr	ene 🔭			1010
53-70-3	Dibenz(a, h	anthrace	ne L			10 0
191-24-2	Benzo(g,h,	i)pervlen	-			1010
		3 =	- -	<del></del>		10 U

OLM02.0

<sup>(1) -</sup> Cannot be separated from Diphenylamine

## 1B SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

## SAMPLE NUMBER

Lab Name:	BIOSPHER	ICS INCORP	ORATED	_ Contract:	ARGONNE	EBR II NO2	1
Lab Code:	93052416	Case No.:	93052416	_ SAS No.:		SDG	No.:
Matrix: (so	11/water)	WATER			Lab Sample ID:	93052416-2	
Sample wt/vo	ol:		(g/mL)		Lab File ID:		
Level: (low/	/med)	LOW			Date Received:	05/24/93	
% Moisture:		decan	ted: (Y/N)		Date Extracted:		
Concentrated	i Extract	Volume:	<del> </del>	(uL)	Date Analyzed:	06/10/93	· · · · · · · · · · · · · · · · · · ·
Injection Vo	olume:		(uL)		Dilution Factor:	1	
GPC Cleanup:	(Y/N)		pH:				NPak
				CONCENTRATI	ON INITS.		720
CAS NO.		COMPOUND		(ug/L or ug		UG/L	Q
108-95-2		Phenol					10 0
111-44-4		bis (2-Chlo	roethyl) e	ther			10 0
95-57-8		2-Chloroph	nenol			<u> </u>	10 0
541-73-1						<del></del>	10 0
106-46-7		-,	robenzene	:	<u> </u>	**	100
95-50-1		1,2-Dichlo	robenzene	<u>:</u> !			10,0
95-48-7		2-Methylph	nenol				10,0
108-60-1		2,2'-oxyb	s(1-Chlor	opropane)			NR
106-44-5		4-Methylph	enol				1010
621-64-7		N-Nitroso-		ylamine !			10 0
67-72-1		Hexachlord	ethane	- i			10,0
98-95-3		Nitrobenze	ne	!		<del> </del>	10.0
78-59-1		Isophorone	<b>:</b>	i			1010
88-75-5				*			10 U
105-67-9		2,4-Dimeth	ylphenol	ì			5010
111-91-1		bis (2-Chlo		methane !			10 0
120-83-2		2,4-Dichlo	rophenol	ř	· · · · · · · · · · · · · · · · · · ·		50 U
120-82-1				ene		<del></del>	10 0
91-20-3				ř	<del></del>		100
106-47-8		4-Chloroan	iline	ì			
87-68-3							50 <sub>1</sub> U
59-50-7	- ·	4-Chloro-3	-methylph	enol	· · · · · · · · · · · · · · · · · · ·	<del></del>	
91-57-6		2-Methylna	phthalene	i			5010
77-47-4		Hexachlore	cyclopent	adiene i		·	10 0
88-06-2		2.4.6-Tric	hlorophen	ol			10:0
95-95-4		2.4.5-Tric	hlorophen	ol			10 U
91-58-7		2-Chlorona	phthalene	,			1010
88-74-4		2-Nitroani	line	į			10 0
131-11-3				j			5010
208-96-8				1	<del></del>	<del>_</del> ,	10 U
606-20-2				i			10 U
99-09-2				}			10 U
<b>83-</b> 32-9				i			50 U
						<del></del>	10 0

Forms by WindowChem (707)864-0045/p/mll823rv3.6/1/1/94

Lab Name:	BIOSPHER	CICS INCOR	PORATED	Contract:	ARGONNE	EBR II NO2	
Lab Code:	93052416	Case No.:	93052416	SAS No.:		SDG	No.:
Matrix: (soi	l/water)	WATER	-		Lab Sample ID:	93052416-2	-
Sample wt/vo	ol:		(g/mL)		Lab File ID:		<del></del>
Level: (low/	'med)	LOW	- -		Date Received:	05/24/93	<del></del>
% Moisture:		decan	ted: (Y/N)	<del></del>	Date Extracted:		<del></del>
Concentrated	Extract	Volume:			Date Analyzed:	06/03/93	
Injection Vo	lume:		(uL)		Dilution Factor:		<del></del>
GPC Cleanup:	(Y/N)	·	pH:				-492
CAS NO.		COMPOUND		CONCENTRATI		UG/L	A 2. 2
51-28-5		2 4 24-44.		<del></del>			
51-28-5 100-02-7		2,4-Diniti	rophenol	į			50¦ប
132-64-9		4-Nitrophe		1			50 0
		Dibenzofur		į			10,0
121-14-2		2,4-Dinita	rotoluene	ŗ	<del></del>		10,0
84-66-2		Diethvlnht	thalata	ī			
7005-72-3		4-chloroph	ienyl-pher	ylether [			1010
00-/3-/		Fluorene		<u>.</u> ا			10 0
100-01-6		4-Nitroani		Ė			INR
534-52-1		4.6-Dinitr		Inhenol			50¦U
86-30-6		N-Nitrosod	liphenvlam	dna (1)	<u> </u>	<del></del> _	50IU I
101-33-3		4-Bromophe	nvl-phenv	ilether !			10 0
118-74-1		Hexachloro	benzene	Techer .			1010
87-86-5		Pentachlor	conhenol	Ļ			10 U
22-01-8		Phenanthre	ne	j.			50 U
120-12-7	;	Anthracene	ne	Ļ			10 U
36-74-8		Millinacenc		<u> </u>			10 U
34-74-2	1	Carbazole Di-n-butyl		<b>}</b> -			NR
206-44-0	ایسید د	Fluoranthe	butuatare	-			100
129-00-0	•		ne	Ļ			10 U
35-68-7		Pyrene		L			10 0
91-94-1	<sub>1</sub>	Butylbenzy	lphthalate	e <u>i</u>	<del></del>		10 0
56-55-3		3,3'-Dichl	orobenzid:	ine [			20 U
		Benzo (a) an	thracene	ī			10.0
218-01-9 <u>-</u>		Chrysene					·
17-81-7	1	bis (2-Ethy	lhexyl)ph	thalate i		<u>.</u>	10 0
17-84-0	· I	Di-n-octyl <sub>l</sub>	phthalate				1010
205-99-2	1	Benzo(b)fl	uoranthen	e			10 0
207-08-9	· 1	Benzo(k) fl					1010
0-32-8	]	Benzo (a) py					10 U
193-39-5		Indeno (1, 2		ene i-			1010
3-70-3	1	Dibenz(a, h	anthrace	ne L			10 M NI
.91-24-2	1	Benzo(g,h,	1) pervlen	<u> </u>			1010 UJ
		<del>-</del>		Ť	<del></del>	<del></del>	10 x UJ

<sup>(1) -</sup> Cannot be separated from Diphenylamine

## 1B SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

Lab Name: BIO	SPHERICS INCOR	PORATED	_ Contract:	ARGONNE	MM-11	
Lab Code: 930	52416 Case No.:	93052416	SAS No. :		_ SDG	No.:
Matrix: (soil/w	ater) WATER	-		Lab Sample ID:	93052416-3	
Sample wt/vol:		(g/mL)		Lab File ID:		<del></del>
Level: (low/med	) LOW	_		- Date Received:	05/24/93	<del></del>
% Moisture:	decar	ted: (Y/N)		Date Extracted:		<del></del>
Concentrated Ex	·			- Date Analyzed:	06/10/93	<del></del>
Injection Volume	e:			Dilution Factor:		<del></del>
		•		Table 140001.		
GPC Cleanup: (Y	/N)	- PH:		-		11/
			CONCENTRAT	ION UNITS:		1/0
CAS NO.	COMPOUND		(ug/L or u		UG/L	Q
108-95-2	Phenol					10 pr ?
111-44-4	bis(2-Chl	oroethyl)e	ther			10 U
95-57-8	<b>-</b> 2-Chlorop	henol				10 V R
541-73-1						10 0
106-46-7	1,4-Dichl	orobenzene	! 		<del></del>	100
95-50-1	1,2-Dichl	orobenzene	:			10 0
95-48-7						10 JU R
108-60-1		is(1-Chlor	opropane)			NR
106-44-5						10 pr P
621-64-7	N-Nitroso	-di-n-prop	ylamine			10.0
67-72-1			i			1010
98-95-3						10,0
78-59-1	Isophoron	e .				1010
88-75-5	2-Nitroph	enol	i			1011
105-67-9	2,4-Dimet	hylphenol	į			501
111-91-1			methane i		· · · · · · · · · · · · · · · · · · ·	100
120-03-2	•		į			50 1
120-82-1		chlorobenz	ene			100
91-20-3			[			10'0
106-47-8			į			50 <sub>1</sub> U
87-68-3		obutadiene				10 U
59-50-7						5011
91-57-6		aphthalene				10,0
77-47-4		ocyclopent				10iU
88-06-2		chlorophen	o <u>l</u>			10 W P
95-95-4	· 2,4,5-Tri	cnlorophen	01			1011
91-58-7 88-74-4			i			10 0
131-11-3			ا و			50 U
208-96-8			į			10 U
606-20-2			i			10 Ü
99-09-2						10 U
83-32-9	3-microan Acenaphth					50 U
		~11C				10,0

Lab Name:	BIOSPHER	ICS INCORE	ORATED	_ Contract:	ARGONNE	MW-11	
Lab Code:	93052416	Case No.:	93052416	_ SAS No.:		SDG 1	No.:
Matrix: (soi	l/water)	WATER	٠.		Lab Sample ID:	93052416-3	
Sample wt/vo	Ļ:		(g/mL)		Lab File ID:		
Level: (low/r	ned)	LOW			Date Received:	05/24/16	
% Moisture: _		decan	ted: (Y/N)		Date Extracted:		
Concentrated	Extract	Volume:		(uL)	Date Analyzed:	06/03/93	
Injection Vol	.ume :		(uL)		Dilution Factor:	1	
GPC Cleanup:	(Y/N)		pH:				
CAS NO.		COMPOUND		CONCENTRATI		UG/L	0 9
51-28-5		2,4-Dinita	ophenol	i			50 <b>لا</b> 3
100-02-7	<b>-</b>	4-Nitrophe	nol	İ			50 Ju 2
132-64-9		Dibenzofur	an				-
121-14-2		2,4-Dinitr	otoluene	ř			10 0
84-66-2		Diethylpht	halate	<u>.</u>			10 0
7005-72-3		4-chloroph	envl-nhen	ulathar [		······································	10,0
86-73-7	- <b>-</b>	Fluorene	enji pilet	Arctifer			10 U
100-01-6		4-Nitroani	line	Ļ			INR
534-52-1		4,6-Dinitr		laborol i			50¦U
86-30-6		N-Nitroso	ishaawla	ipnenoi i			50班 名
101-55-3		A-Bremenhe	ThuenAram	une (1)			10 <b>'</b> U
118-74-1		4-Bromophe		rether i			1010
87-86-5		Hexachloro	penzene	i,			10¦U
85-01-8	<b></b>	Pencachior	opnenoi	; <del> -</del>			50JU- R
120-12-7				Ļ			10 U
86-74-8		Anthracene		! •			10 0
84-74-2		Carbazole		į			NR
206-44-0		Di-n-butyl	pntnalate	•			10 <u>'</u> U
129-00-0		Fluoranthe	ne	<u> </u>	-		10 U
85-68-7		Pyrene		į.			10 U
91-94-1		Butylbenzy					10 บ
56-55-3		3,3'-Dichl		ine			20 U
218-01-9		Benzo(a) an	thracene	1_			10 U
218-01-9 117-81-7		Chrysene		., .			10 0
117-81-7 117-84-0		bis(2-Ethy		-			10:0
117-64-0 205-99-2		Di-n-octyl					10,0 1/5
		Benzo(b) fl		•			10 W (CT
207-08-9		Benzo(k)fl		e [			10,8 //5
50-32-8		Benzo(a)py		Ĺ			1010/1/5
193-39-5		Indeno(1,2	,3-cd)pyr	ene [			10,8 1/1
53-70-3 191-24-2		Dibenz(a,h					1018 US
131-54-5		Benzo(g,h,	1)perylen	e j			10 11 115
				•			1 "

<sup>(1) -</sup> Cannot be separated from Diphenylamine